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ABSTRACT

An overcorrection procedure was developed and used to eliminate drocling and tongue thrusting in two 5-year-old speech and language impaired females (one cerebral palsied and the other with an inherited disease of the autonomic nervous system). The procedure, which involved positive reinforcement paired with a verbal warning, eliminated one child's drooling and reduced the other child's tongue thrusting behavior. (Author/SB)

THE EFFICACY OF AN OVERCORRECTION PROCEDURE IN THE MANAGEMENT OF TONGUE-THRUST AND DROOLING BEHAVIOR

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Maladaptive behaviors are frequently encountered in the speech clinic. Although not specifically defined as speech problems, they tend to interfere with speech and language training. Drooling is frequently seen in children with cerebral palsy (Blencowe, 1969) who lack controlled swallowing and whose mouth areas are insensitive to saliva. Children with less severe cerebral palsy and a potentially normal swallow may also have a drooling problem. The swallow reflex in these children may not have developed normally because of a failure to acquire the habit of closing the mouth while swallowing. Tongue thrusting is also a frequent concomitant of the deviate swallow.

Several current approaches to the control of drooling include drug and myofunctional therapy. Banthine, a drug used to control and eliminate drooling behavior in children, chemically induces salivary suppression through the deactivation of the salivary glands. Myofunctional therapy techniques have also been used in reducing drooling and tongue thrust behavior. A typical exercise requires the child to hold a 2 by ½ inch strip of plastic between his lips for a specified period of time while keeping his teeth together. The length of time is gradually extended.

In addition, it may be possible to control drooling

and tongue thrusting by applying procedures found to be useful in controlling other aberrant behaviors. For example, the overcorrection procedure described by Foxx and Azrin (1972) applies the rationale that requiring a person not only to correct the environmental effects of his inappropriate act, but also to practice overly correct forms of appropriate behavior will result in decreasing or eliminating the undesired behavior. The overcorrection procedure should be directly related to the undesired behavior or it may become punitive or arbitrary. It is also necessary that overcorrection be instituted immediately after the undesired behavior has occurred, preventing any reinforcement of the undesired behavior. The overcorrection procedure should be extended, preventing the client from engaging in other activities which are reinforcing. Therefore, overcorrection may be considered a timeout period.

Azrin and Foxx (1971) successfully reduced incontinence in nine profoundly retarded adults by 90% employing an intensive training program which included the overcorrection procedure in addition to a number of other methods. Whenever incontinence occurred, the clinician made the patient clean up all traces of accidents, wash his soiled clothing, shower and obtain fresh clothing.

Foxx and Azrin (1972) found that by employing overcorrection with a 22-year-old profoundly retarded female, they were able to eliminate frequent episodes of physical assault. The patient's aggressive attacks included biting of the arms, legs, and heads of other residents, scratching their eyes and banging their heads. Immediately after a biting episode occurred the overcorrection procedure was instituted. The overcorrection lasted a minimum of thirty minutes and included a combination of three training procedures. The first procedure was the Oral Hygiene Training in which the patient's mouth was cleansed for ten minutes with a toothbrush soaked in an oral antiseptic. The second procedure was the Medical Assistance Training during which the patient washed the bitten area, applied an antiseptic solution, bandaged the area and nodded her head affirmatively as each line of the hospital incidence report was read aloud. The third procedure, the Social Reassurance Training, required the patient to stroke, lightly and continuously, the victim's back in assurance that the incident would not be repeated. When the overcorrection was introduced, the number of attacks decreased immediately. After two weeks, they were at a near zero level and remained near zero during the remaining eleven weeks of training. In the same study,

Foxx and Azrin were also able to eliminate property destruction, tantrums and continuous screaming in brain damaged adults by employing overcorrection.

Several procedures have been used in an attempt to eliminate self-stimulatory behavior in retarded and autistic individuals, but none have been successful in demonstrating effectiveness (Lovaas, Schaeffer and Simmons, 1965; Mulhern and Baumeister, 1969). Foxx and Azrin (1973) compared the effectiveness of physical punishment by slap, positive reinforcement for nonself-stimulatory behavior, a distasteful solution painted on the hand of a hand mcuther and free reinforcement with overcorrection in eliminating the behavior of hand mouthing. The most effective method of treatment was overcorrection, which reduced the number of hand mouthings from over one hundred per hour to zero per hour. A verbal warning was paired with the overcorrection procedure. When overcorrection was eliminated, it was found that the verbal warning alone was sufficient to maintain the desired behavior.

The purpose of the present experiments was to determine if an overcorrection would be effective in eliminating drooling and tongue thrusting behaviors.

EXPERIMENT I

Method

Subject:

L was a five-year-old cerebral palsied female. Results obtained from formal and informal assessment of language ability determined that L's receptive language was good, but that she was delayed in expressive language. L's speech was limited to one syllable nouns and verbs, and she exhibited very little spontaneous speech (e. g., "Anthony sick," "Stay there," "I see you").

L's speech was frequently unintelligible due to poor articulation which was characterized by the omission of medial and final sounds. L's balance was poor and her movements were slow and tremulous. Her gait was unsteady, and her hands trembled. When tested, L demonstrated difficulty with fine motor tasks. L had difficulty elevating and lateralizing her tongue. Her neurological report indicated minor brain damage to the motor area. L's speech problem was considered to have been due in part to dysarthria. L was a mouth breather; she constantly maintained an open mouth posture, and she drooled excessively.

Apparatus:

The study was conducted in a 7½ by 9 foot therapy room. The subject and one clinician sat facing each

other on the same side of a table. A second clinician and a student observer were present in the room to record data. A basin of water was placed on the table where it could be easily seen by the subject. Next to the basin of water was a bar of soap, a washcloth and a towel. The language tasks being presented were placed directly in front of the subject. Food reinforcers were also on the table visible to the child.

Procedure:

The method of reinforcement was based on a system of checks. When L earned ten checks she received a Frito. When fifty checks were earned, she received a reward which she chose from an array of reinforcers.

An episode of drooling was operationally defined as a drop of saliva which reached below the lower lip to the area of the mentalis muscle, since this child only drooled centrally and was observed during baseline to draw in her lower lip and swallow excess saliva. One clinician and one observer recorded the data and the number of drools which occurred during each 45-minute session.

Data were taken during four sessions to determine the baseline rates of the drooling behavior. The following six sessions included the overcorrection procedure. Throughout this stage of the experimental procedure, each episode of drooling was followed by the

clinician saying, "L, big girls don't drool" in a non-punitive manner. The verbal reprimand and over-correction in combination were instituted in close temporal relationship to the episode. Immediately after the verbal reprimand, the following instructions were given to L: "L, wet the wash cloth and put some soap on it. Now wash your lips, chin and hands. Take the wash cloth and rinse the soap off your lips, chin and hands. Now take the towel and dry your hands and face." L was also required to towel dry any water on the table resulting from drooling or the overcorrection method. Overcorrection was extinguished for four 45-minute sessions and then reinstated in order to determine its effect on reducing drooling. When reinstated, the overcorrection was eliminated, with only the verbal admonition, "L, big girls don't drool" presented contingent upon each episode of drooling.

Results

During the pretraining baseline procedure, L drooled on the average of thirteen times per session. Her behavior during these four baseline sessions, however, was considerably variable, ranging from 9 to 19 drools during a single 45-minute session. When the overcorrection was instituted, the number of drools

was immediately decreased to three episodes per session. During the second session of training, the overcorrection procedure resulted in a reduction in the number of drools from three to one episode of drooling. The number of episodes of drooling was decreased to zero during the third training session and remained at zero for the duration of the experiment. No instances of drooling were recorded during the extinction procedure which immediately followed the termination of the training procedure (see Figure 1).

EXPERIMENT II

Method

Subject:

M was a five-year-old female who suffered from familial dysautonomia, a rare hereditary disease of the autonomic nervous system. Although a speech and language delay was evident and predictable (Halpern, Hochberg and Rees, 1967), a more urgent need was M's inability to use the articulators for vegetative functions. Her medical condition limited her sense of taste as well as oral kinesthesis. M's constant tongue thrusting interfered with any clinical intervention aimed at improving her intelligibility.

Apparatus:

Experiment II was conducted by the senior author with the assistance of a student observer who recorded data. The conditions described in Experiment I were maintained. However M's lunch was used as a food reinforcer.

Procedure:

As in Experiment I the method of reinforcement was based on a system of checks. When M earned ten checks she received a bite of her sandwich. When fifty checks were earned, she received a reward which she chose from an array of reinforcers.

An episode of tongue thrusting was operationally defined as the projection of the tongue beyond the lip area. Licking the lips was not considered a tongue thrust.

The procedures for baseline, overcorrection, and extinction were identical to those in Experiment I, as was the method of overcorrection. Only the verbal reprimand was changed, although the number of syllables and words in the reprimand remained constant. Each episode of tongue thrusting was followed by the clinician saying, "M, put your tongue in."

Results

Data show the following mean number of tongue protrusions recorded during a five minute period at the

same time each day: Baseline $\bar{X}$ = 26.25; Overcorrection + Verbal Stimulus $\bar{X}$ = 3.17; Verbal Warning Alone $\bar{X}$ = 5.17; Extinction $\bar{X}$ = 12.00; Reinstatement of Verbal Warning Alone $\bar{X}$ = 6.00. Figure 2 shows the scores of individual sessions.

Discussion

The results indicated that overcorrection, when preceded by a verbal warning, was effective in eliminating the drooling and reducing the tongue thrusting of these children. The value of pairing the verbal warning with the overcorrection procedure was demonstrated by the results obtained when the verbal warning was applied outside the clinic. During the experiment, although it was observed that drooling had decreased in the clinic, L's mother reported that L continued to drool at home. L's mother was then instructed to use the verbal admonition, "L, big girls don't drool" whenever a drooling episode occurred at home. At the end of the experiment, L's mother reported that although she found it necessary to give the verbal warning twice, she had observed a decrease in L's drooling behavior at home. Four months after the completion of the experiment, it was reported that there had been no recurrence of drooling episodes in the clinic.

It appears that the verbal warning was necessary to

effect generalization of non-drooling behavior outside the clinic. During training, the overcorrection procedure may have constituted an aversive situation for L. Since the verbal admonition reliably preceded the institution of the overcorrection procedure, it may have become a conditioned aversive stimulus, signaling that the overcorrection procedure could be avoided by voluntary control of drooling.

From the results of Experiment II, it is clear that generalization of the overcorrection procedure was successful not only from one environment to another for the same child, but from one child to another in treating different behavioral problems. Side effects were noted following the conclusion of Experiment II. L began to exhibit frequent episodes of teeth grinding behaviors and the emission of a sound best described as a pharyngeal snort. These behaviors had not been manifested previously and cannot be accomplished with a protruded tongue.

It is also important that one be aware of the limits of the applicability of this procedure. The overcorrection procedure used in the present study was based on the assumption that the child is able to control the muscles of the lips, jaw and tongue. Therefore, the child should have been able to control drooling or tongue thrusting voluntarily. In the case of an organic

impairment as the causative factor of drooling or tongue thrusting, the use of overcorrection would probably be both ineffective and detrimental. One must also consider the possibility that the drooling or tongue thrusting behavior may be reinforcing to the child. An example would be the considerable attention from parents which the child receives because of his drooling or tongue thrusting behavior. In this situation, overcorrection may not be effective until the reinforcer for the undesired behavior has been identified and removed. It would appear that the application of this overcorrection procedure is most practical for cases where the drooling or tongue thrusting episodes occur predominantly because of an incorrect swallow pattern or because of the habit of maintaining an open mouth posture.

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Figure 1. Number of drools which occurred during pre-training, overcorrection and post-training.

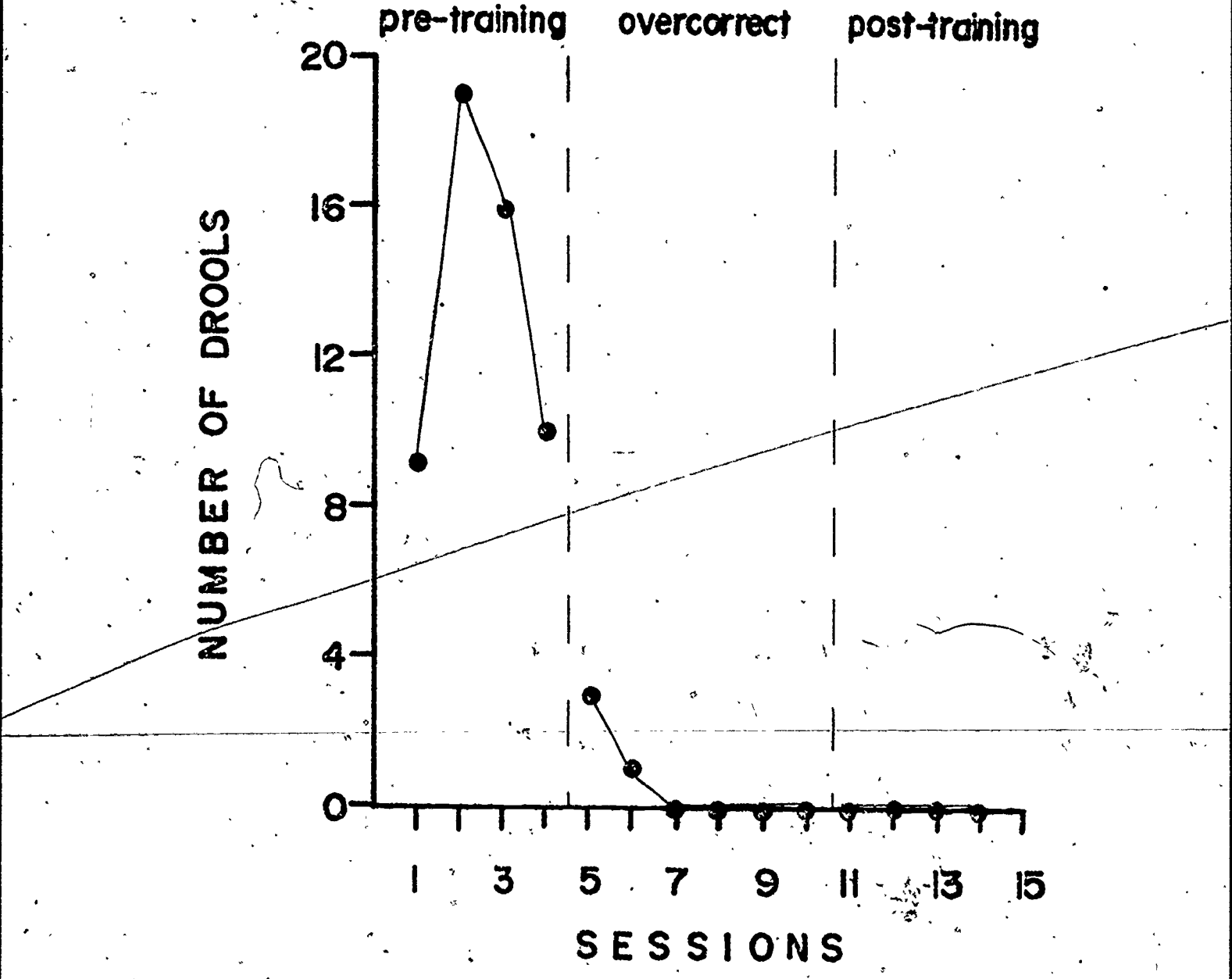
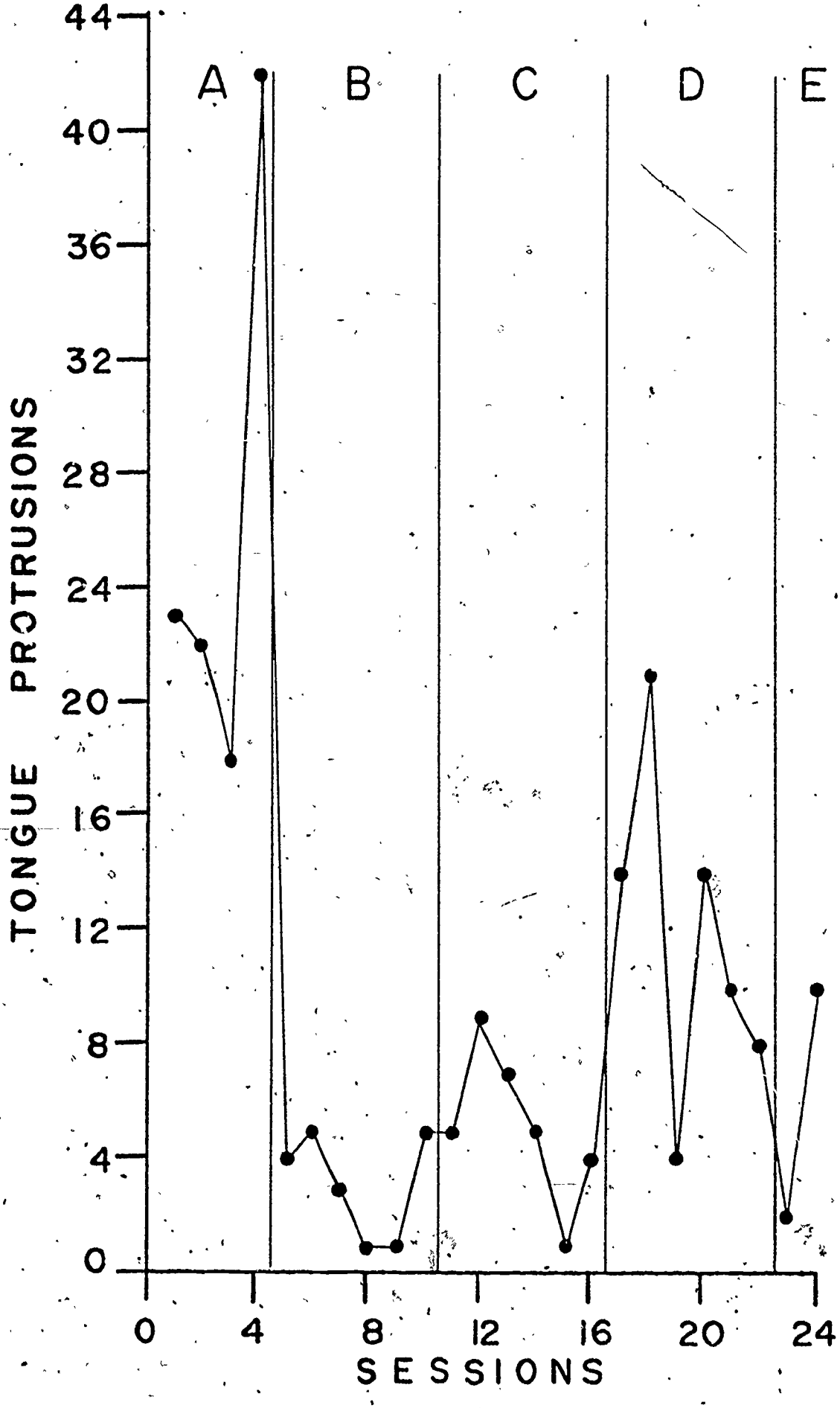

pre-training
overcorrect
post-training
NUMBER OF DROOLS
20
16
12
8
4
0
1
3
5
7
9
11
13
15
SESSIONS

Figure 2. Number of tongue protrusions which occurred during: A, Baseline; B, Overcorrection + Verbal Warning; C, Verbal Warning Alone; D, Extinction; E, Reinstatement of Verbal Warning Alone. S was absent from remaining clinic sessions following two trials of Condition E.


A
B
C
D
E
44
40
36
32
28
24
20
16
12
8
4
0
TONGUE PROTRUSIONS
0
4
8
12
16
20
24
SESSIONS